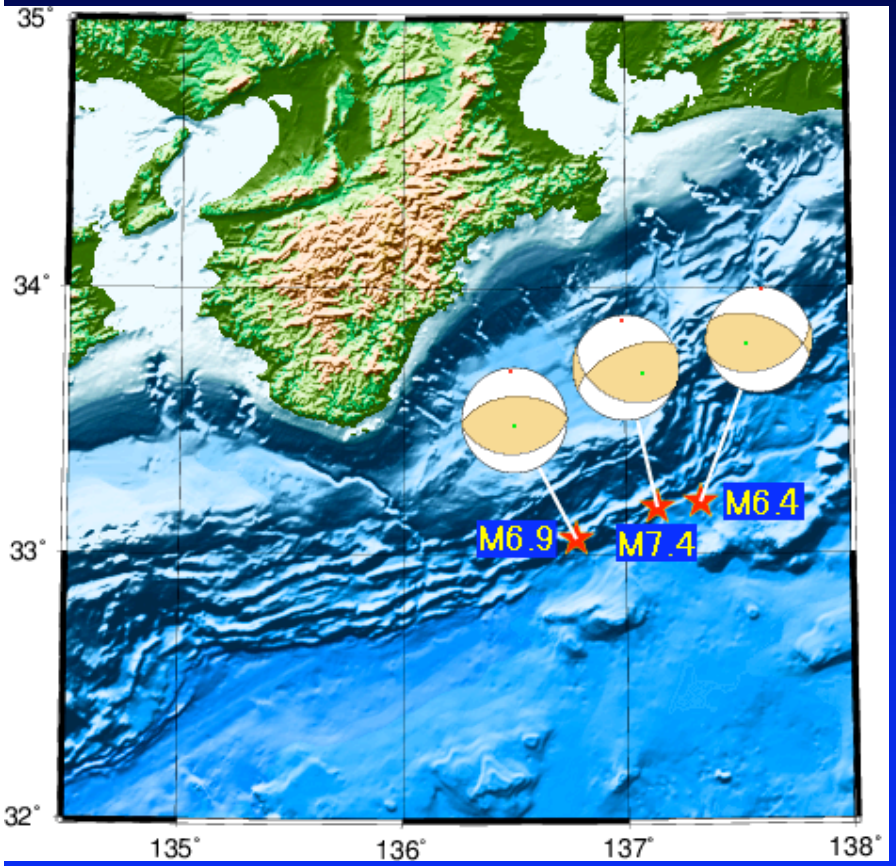
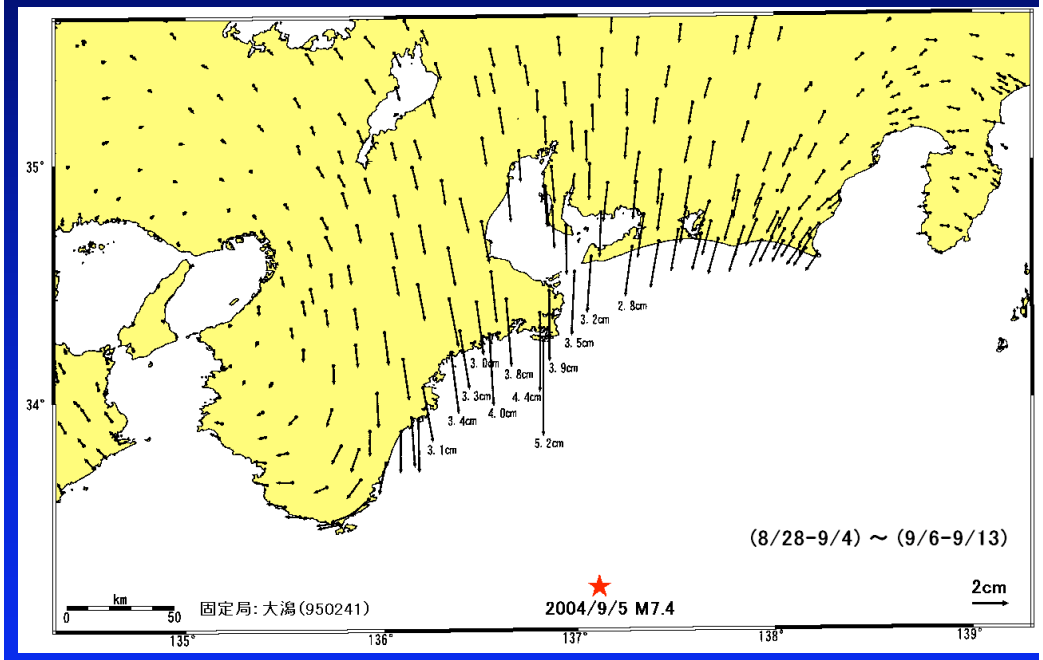
# The SE-off Kii Peninsula earthquake (M=7.4) of Sep.5, 2004

## - A quick Report -





Yoshimitsu Okada

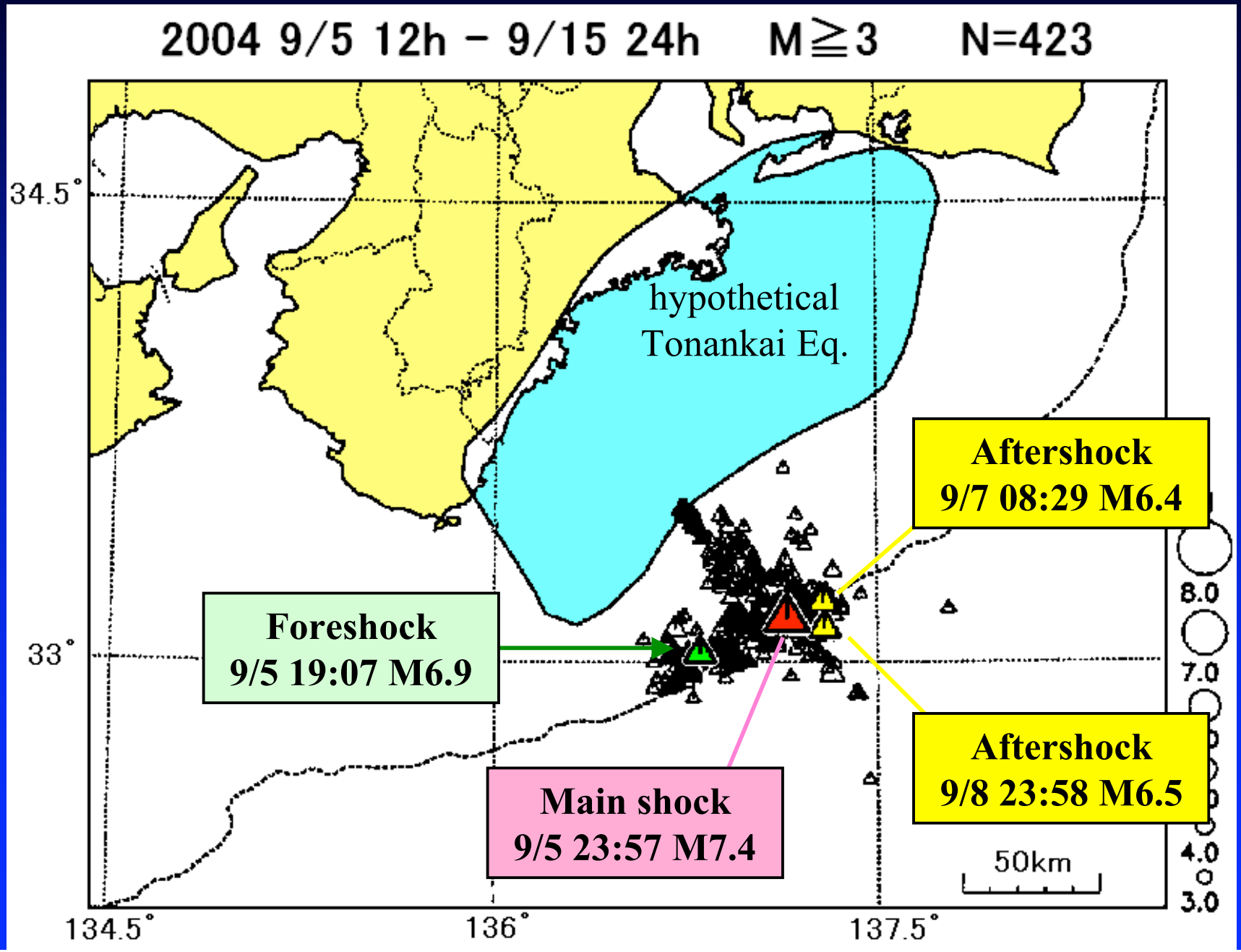
( Coordinating Committee for Earthquake Prediction (CCEP), Japan )



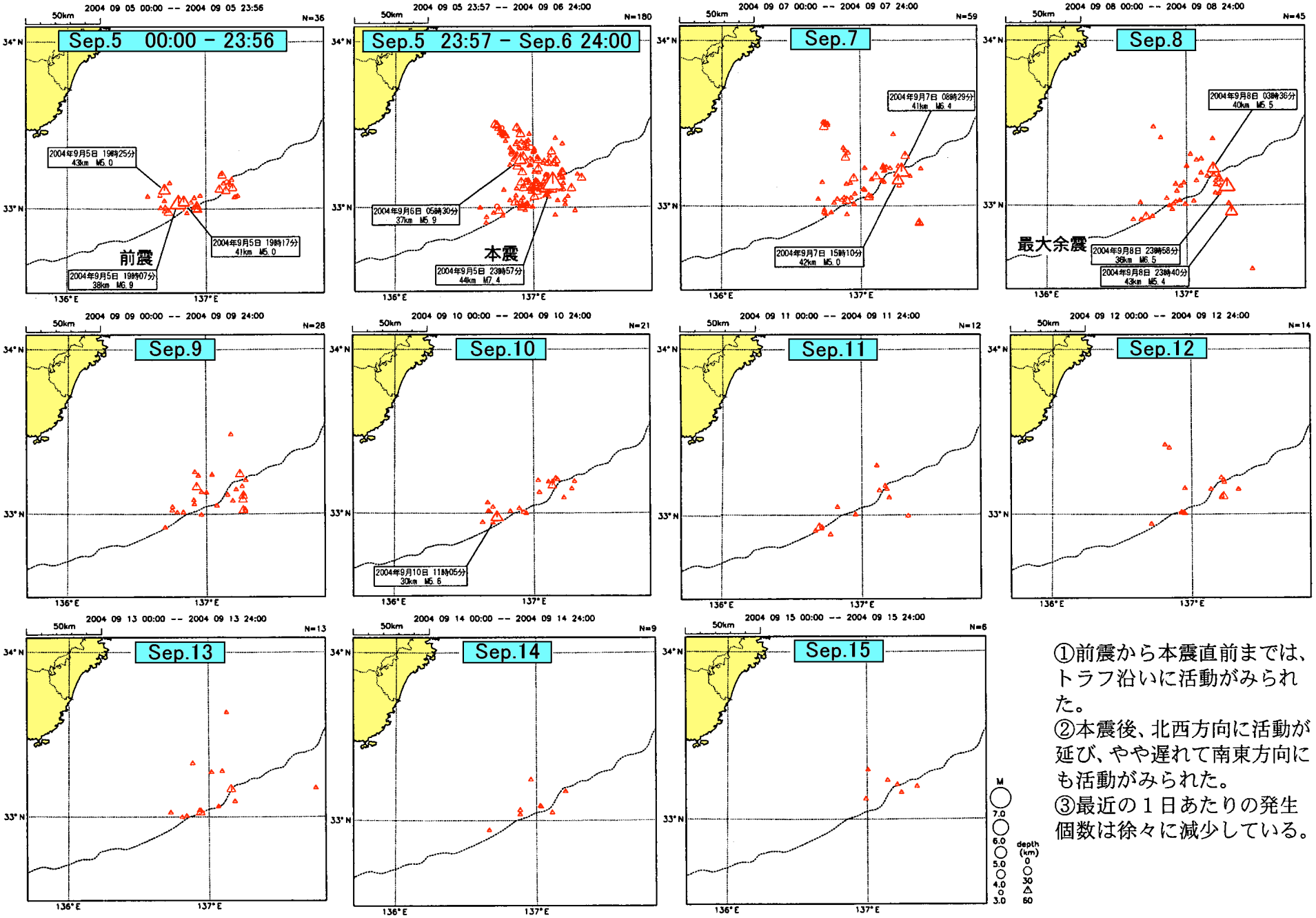
*2004.10.13 5th UJNR Earthquake Research Panel at Monterey*

# Earthquake sequence

*(JMA, 2004)*



# Daily epicentral distribution (M≧3) *(JMA, 2004)*



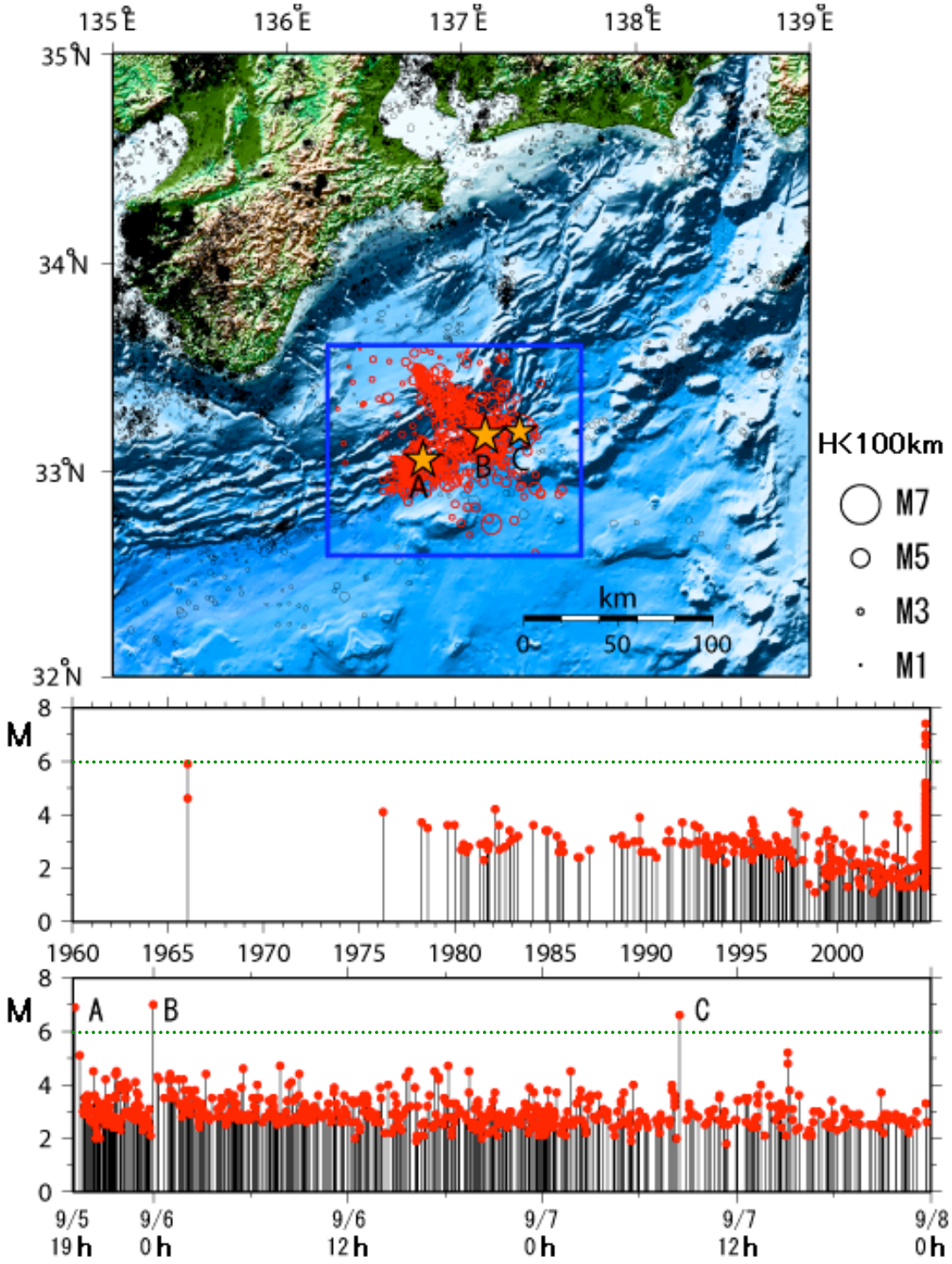

①前震から本震直前までは、トラフ沿いに活動がみられた。
②本震後、北西方向に活動が延び、やや遅れて南東方向にも活動がみられた。
③最近の１日あたりの発生個数は徐々に減少している。

# Epicentral distribution and M-T diagram

*(NIED, 2004)*

*1960/1/1 – 2004/9/7*

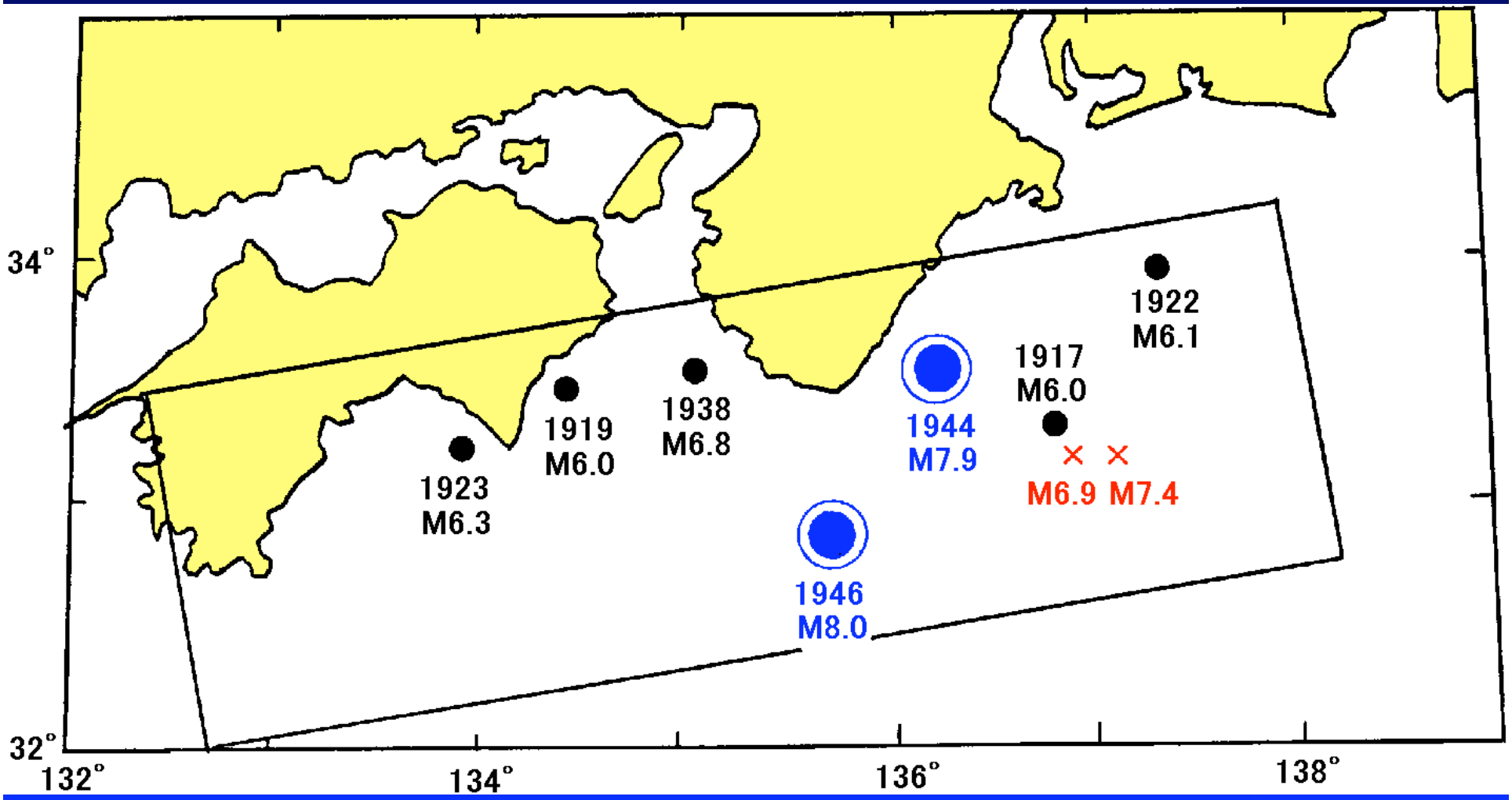
*9/5 19h – 9/7 24h*



# Historical earthquakes along Nankai trough before 1944 Tonankai and 1946 Nankai earthquakes

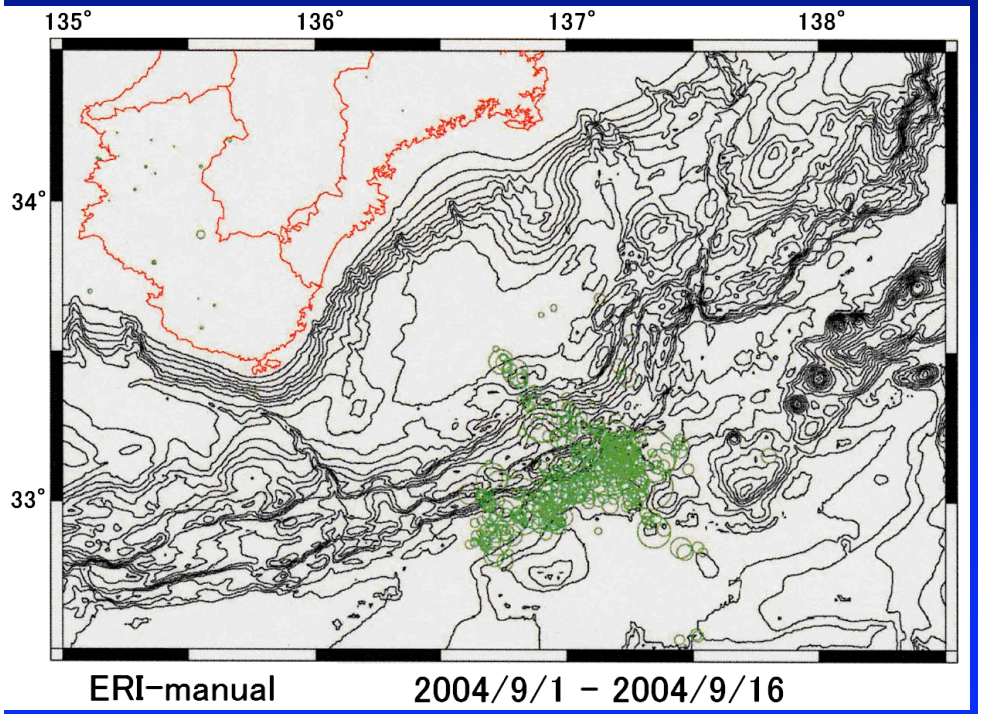
(1885-1943: M≧6, H＜100km)

*( Ohtake, 2004 )*

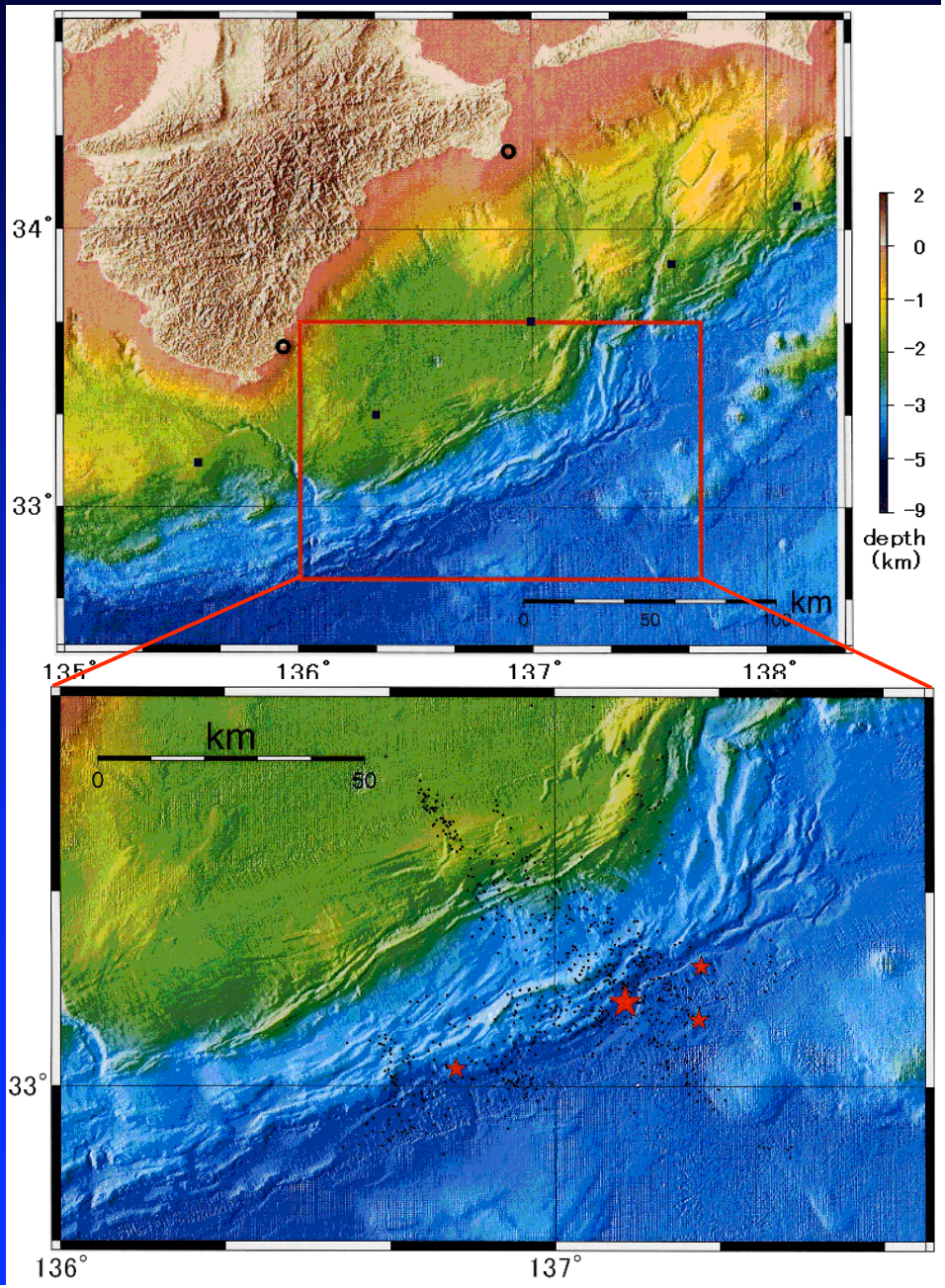


# Aftershock distribution and ocean bottom topography

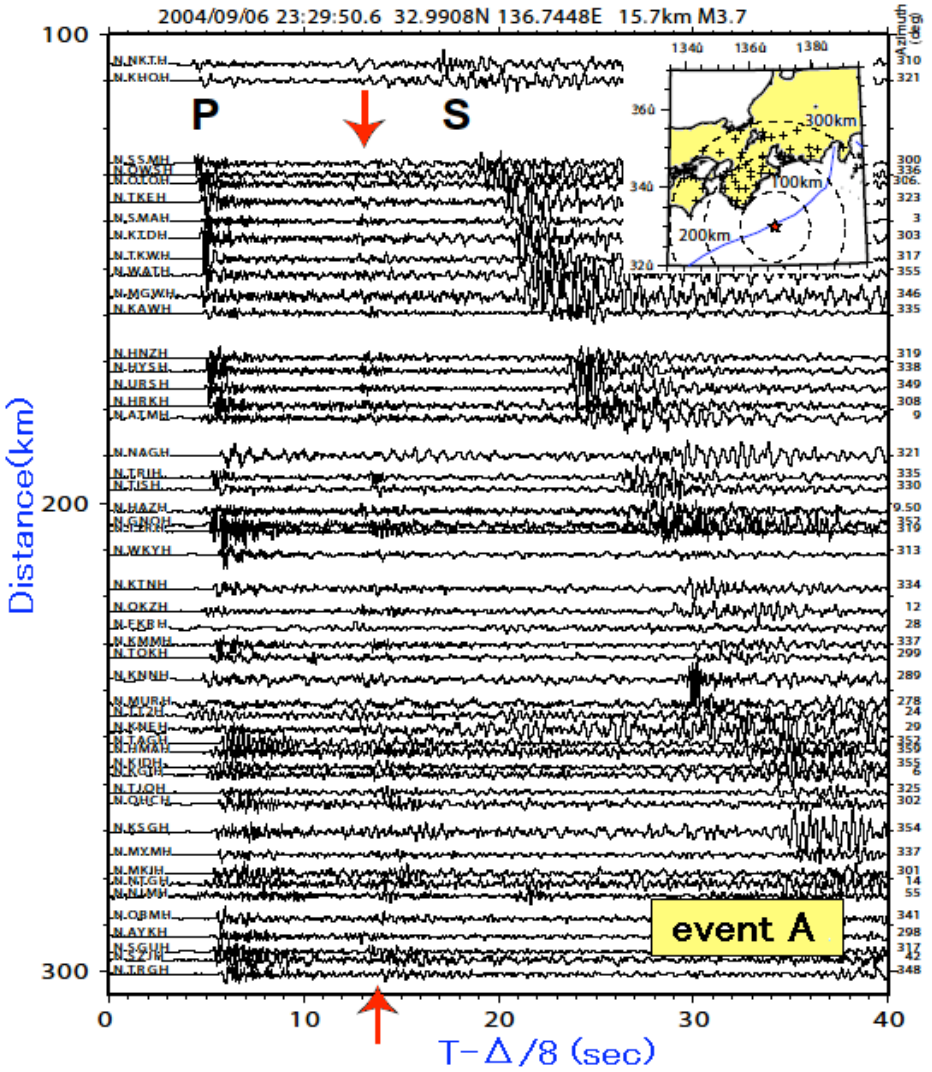
*( Earthquake Research Institute, Univ. of Tokyo , 2004)*

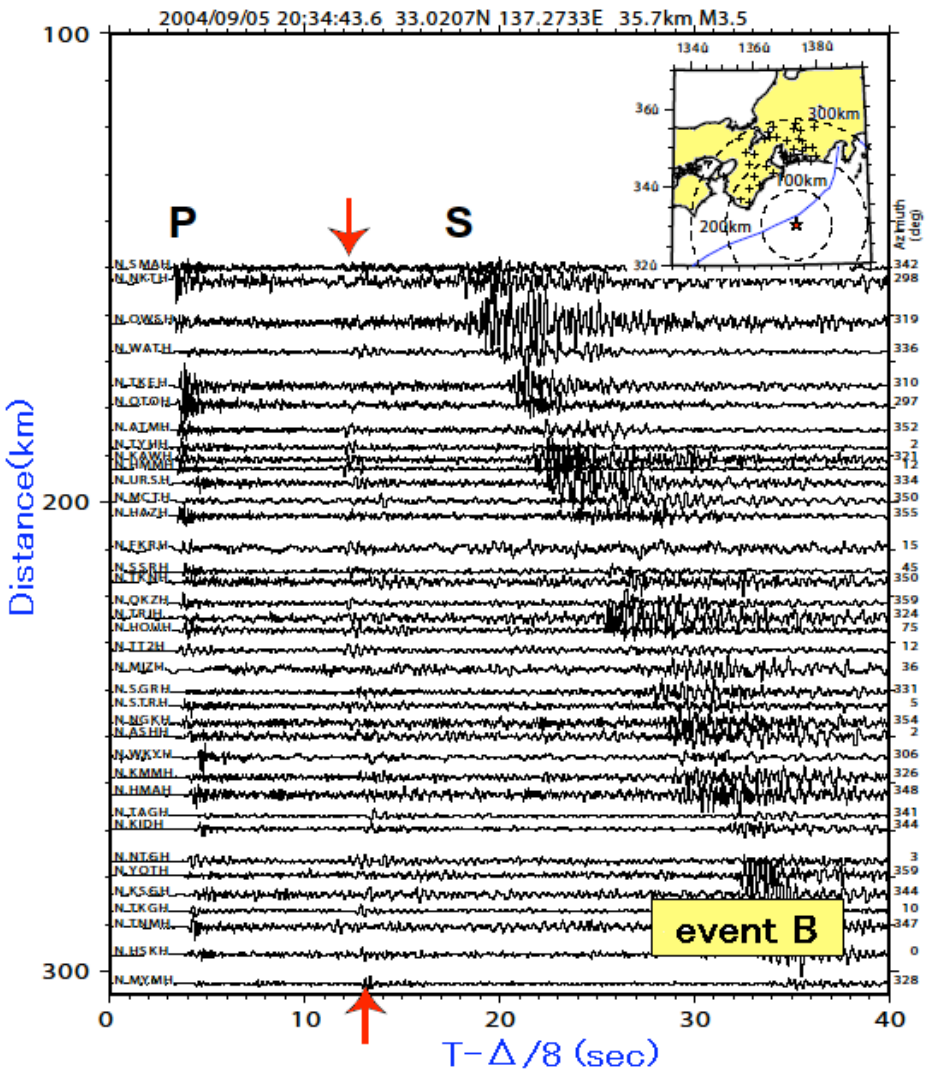



*( Hydrographic and Oceanographic Department, Japan Coast Guard, 2004 )*



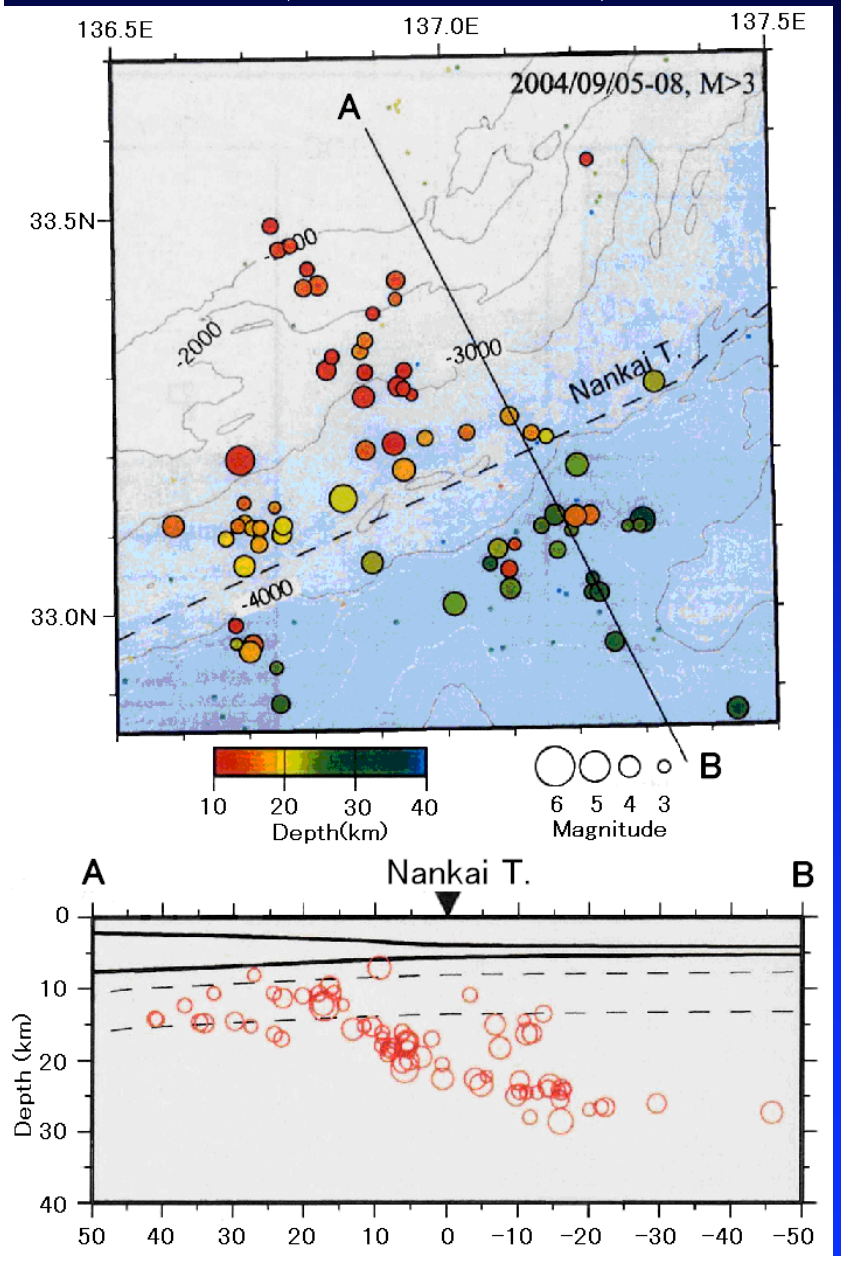
# Later phase (sP) recorded at Hi-net stations *(NIED, 2004)*



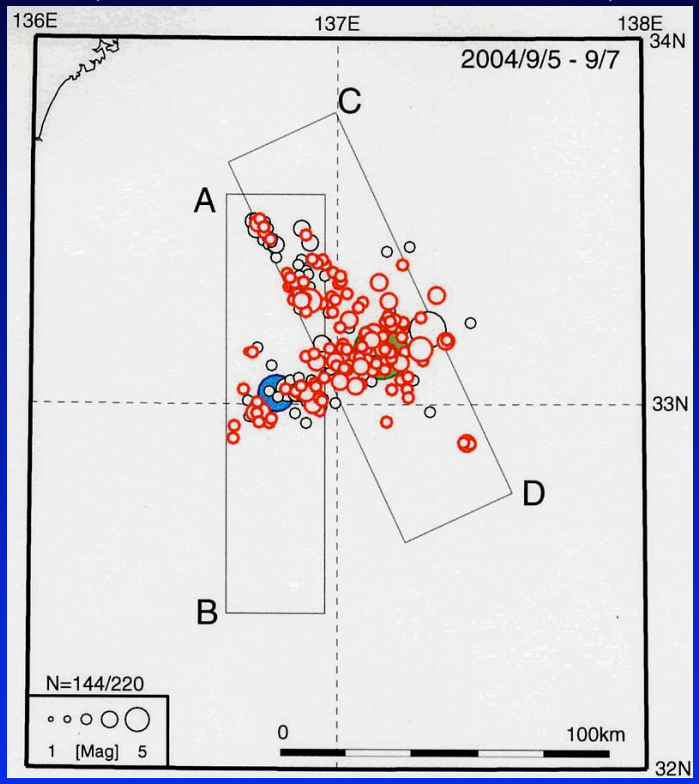



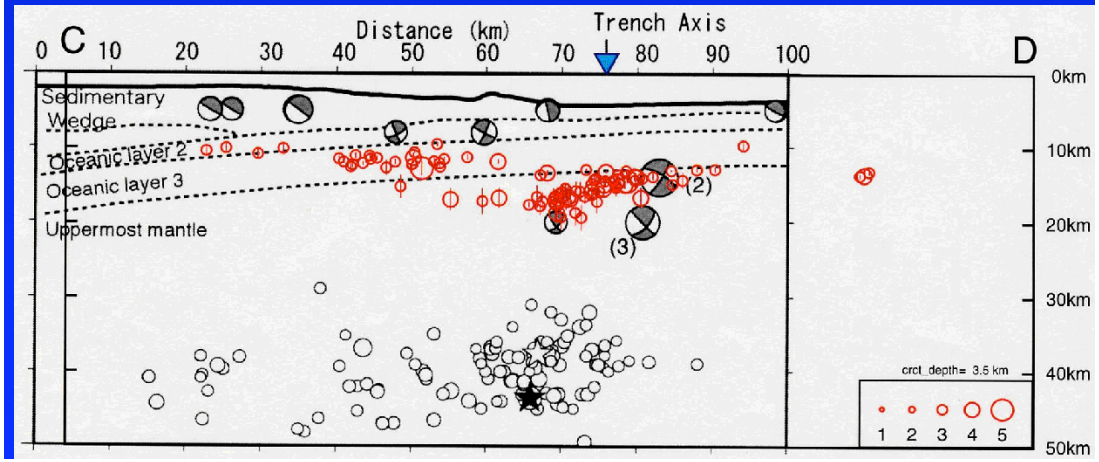
# Redetermination of hypocenters using sP-P time

*(NIED, 2004)*

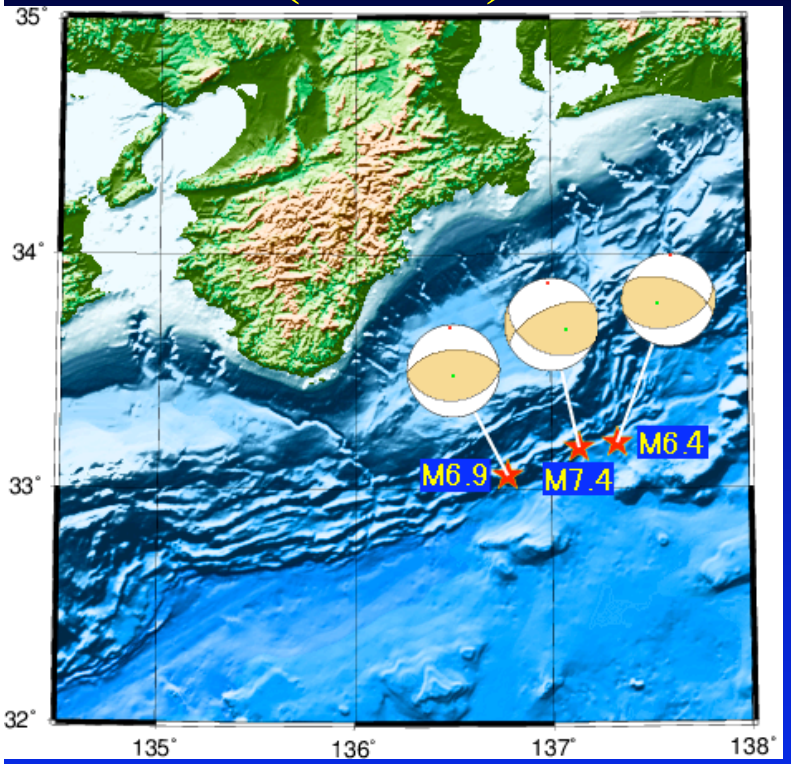



*(Tohoku Univ., 2004)*



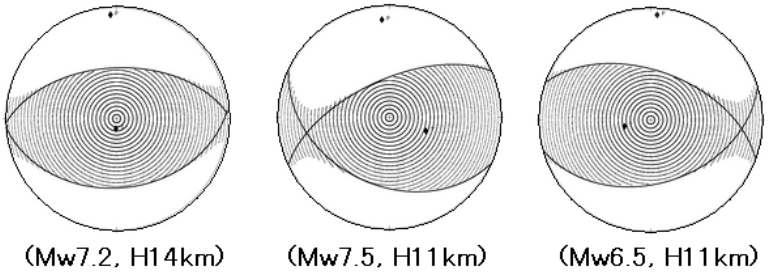
# Focal mechanism (CMT)



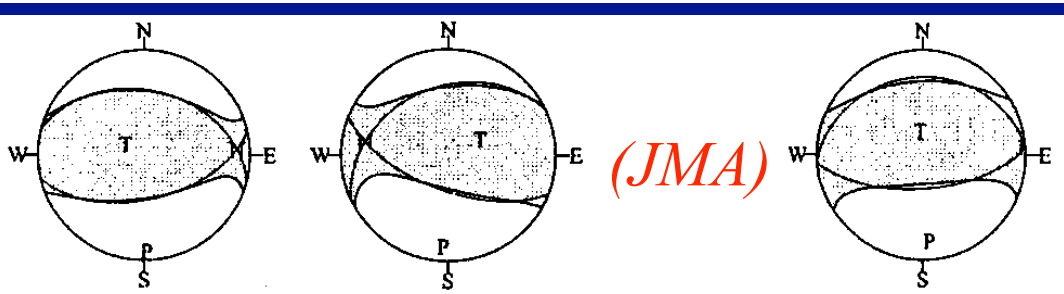

*(Yamanaka, ERI)*

*(Yagi, BRI)*

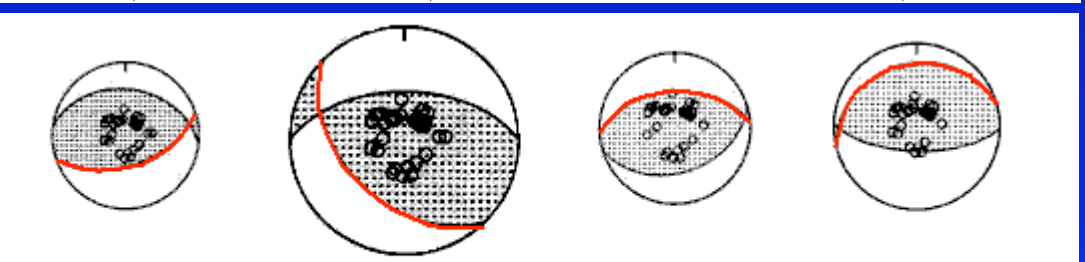
| 9/5 19:07 Mjma 6.9 | 9/5 23:57 Mjma 7.4 | 9/7 08:29 Mjma 6.4 | 9/8 23:58 Mjma 6.5 |
|---|---|---|---|

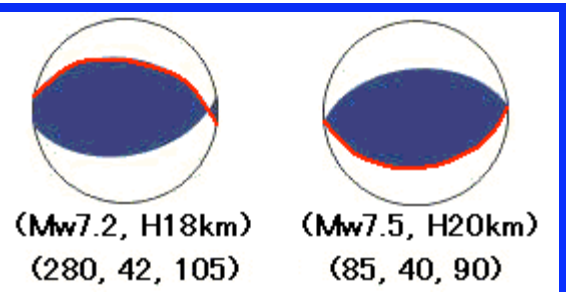



*(NIED)*



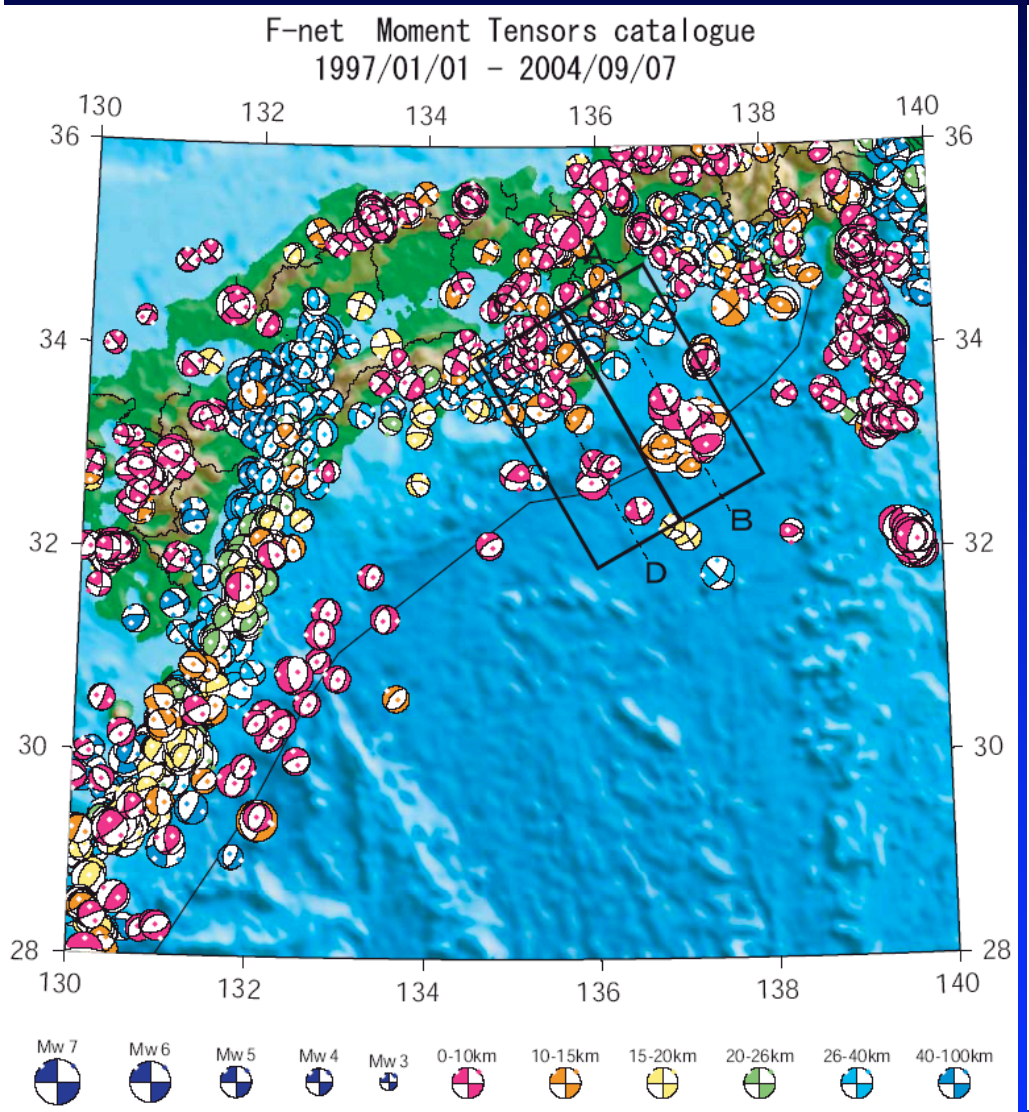

*(JMA)*

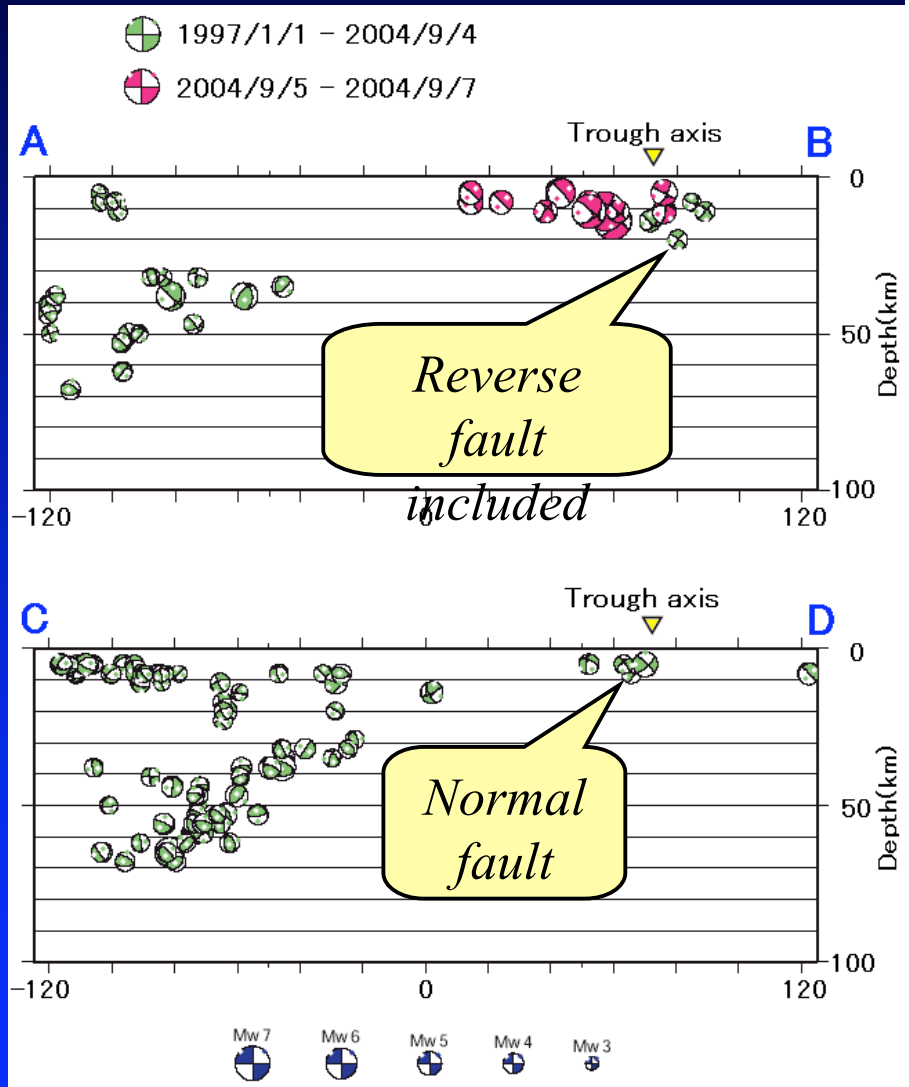


# Background distribution of CMT

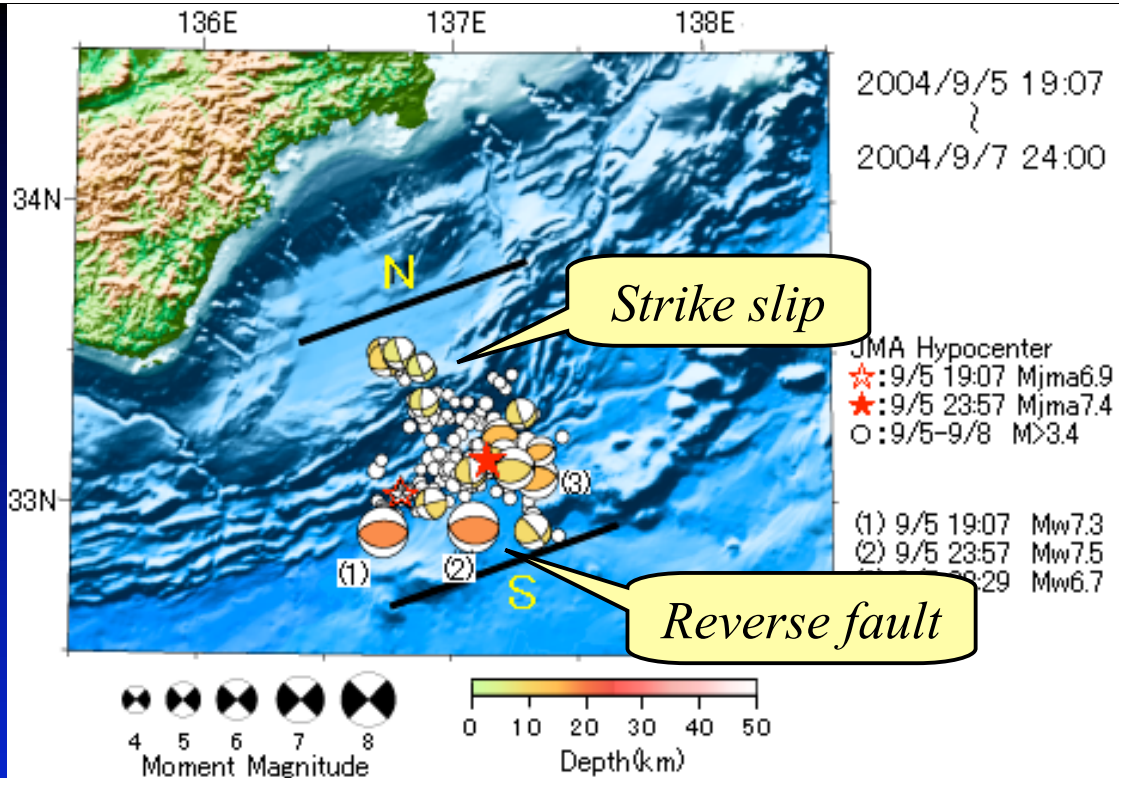
*(NIED, 2004)*

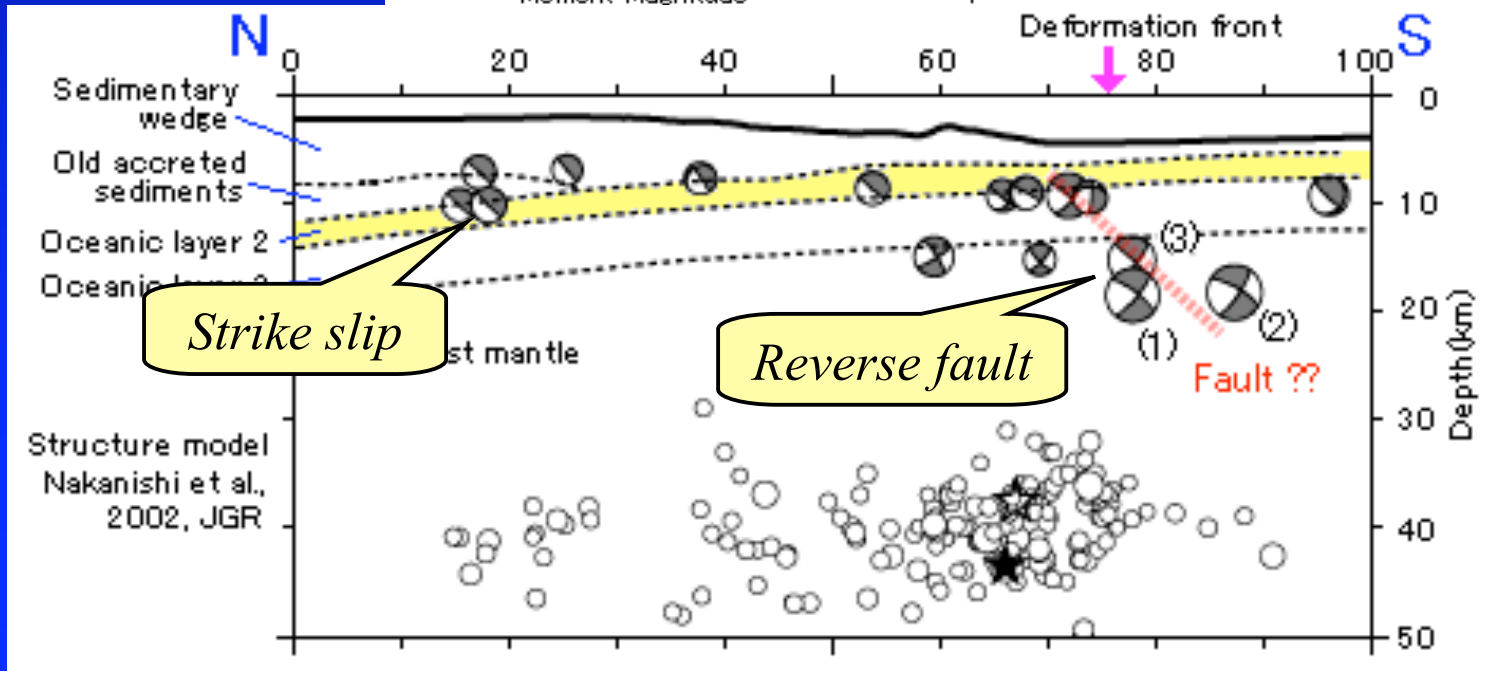


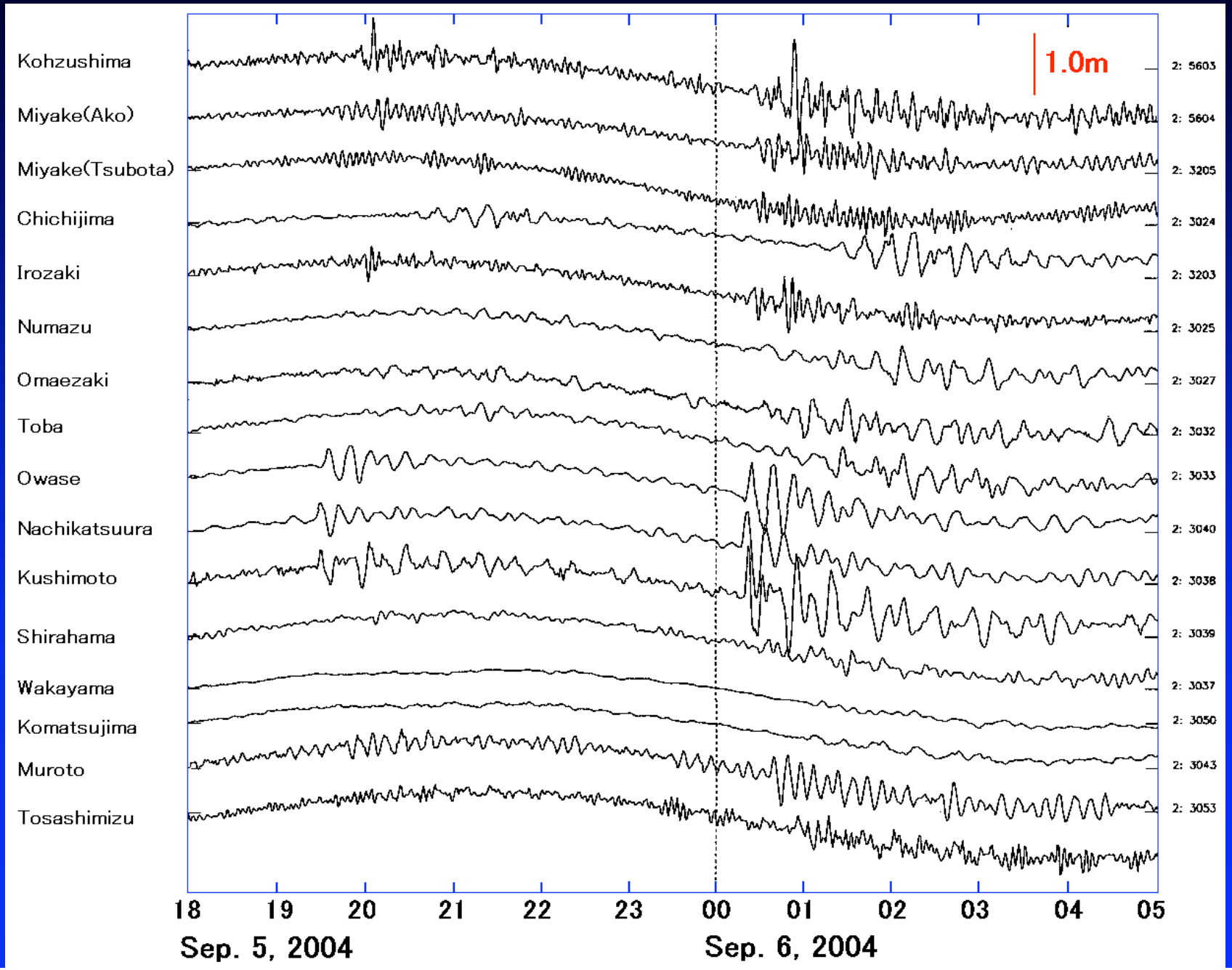
# Spatial distribution of CMT

*(NIED, 2004)*



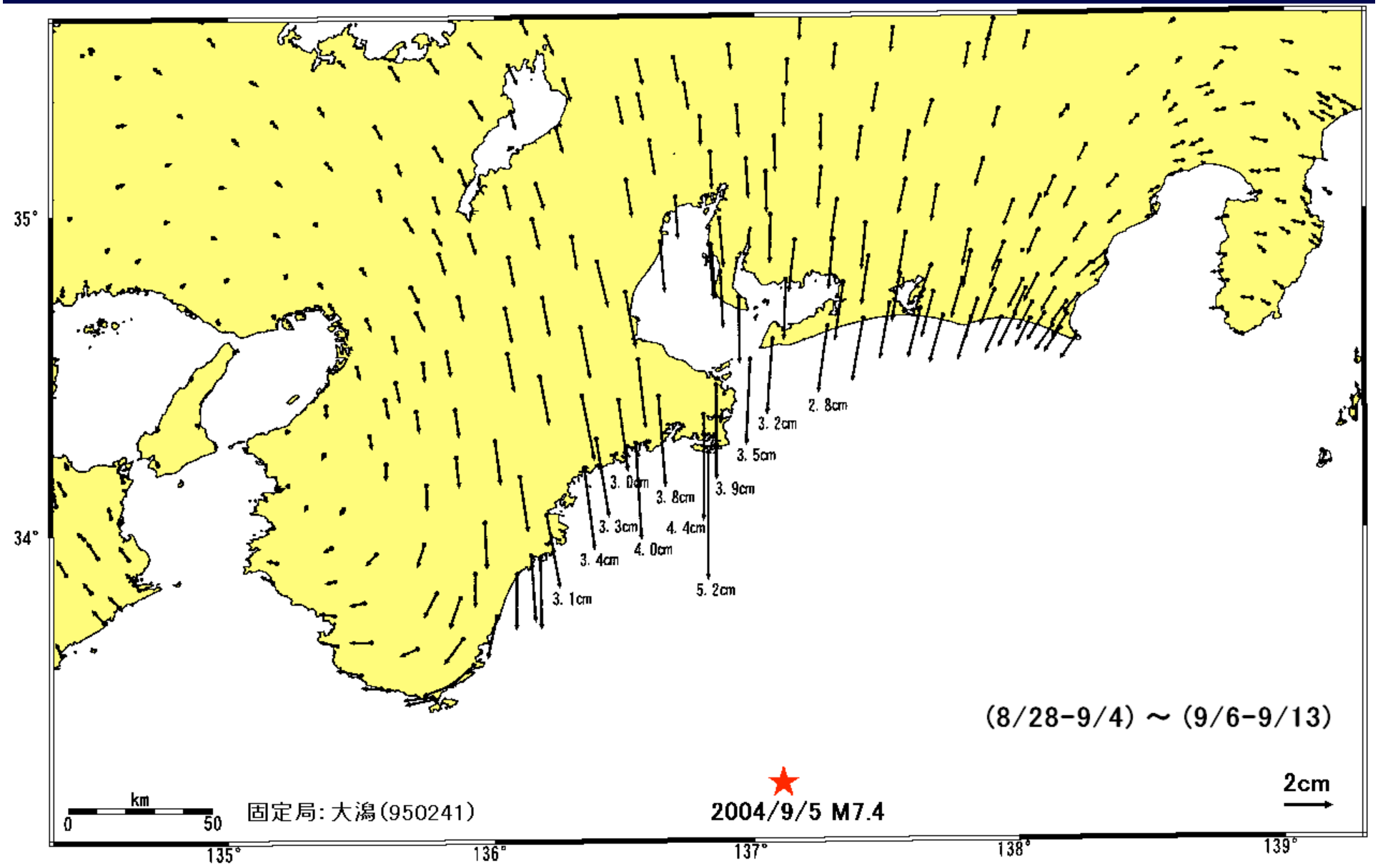
# Tsunami records associated to foreshock and main shock




*(JMA, 2004)*

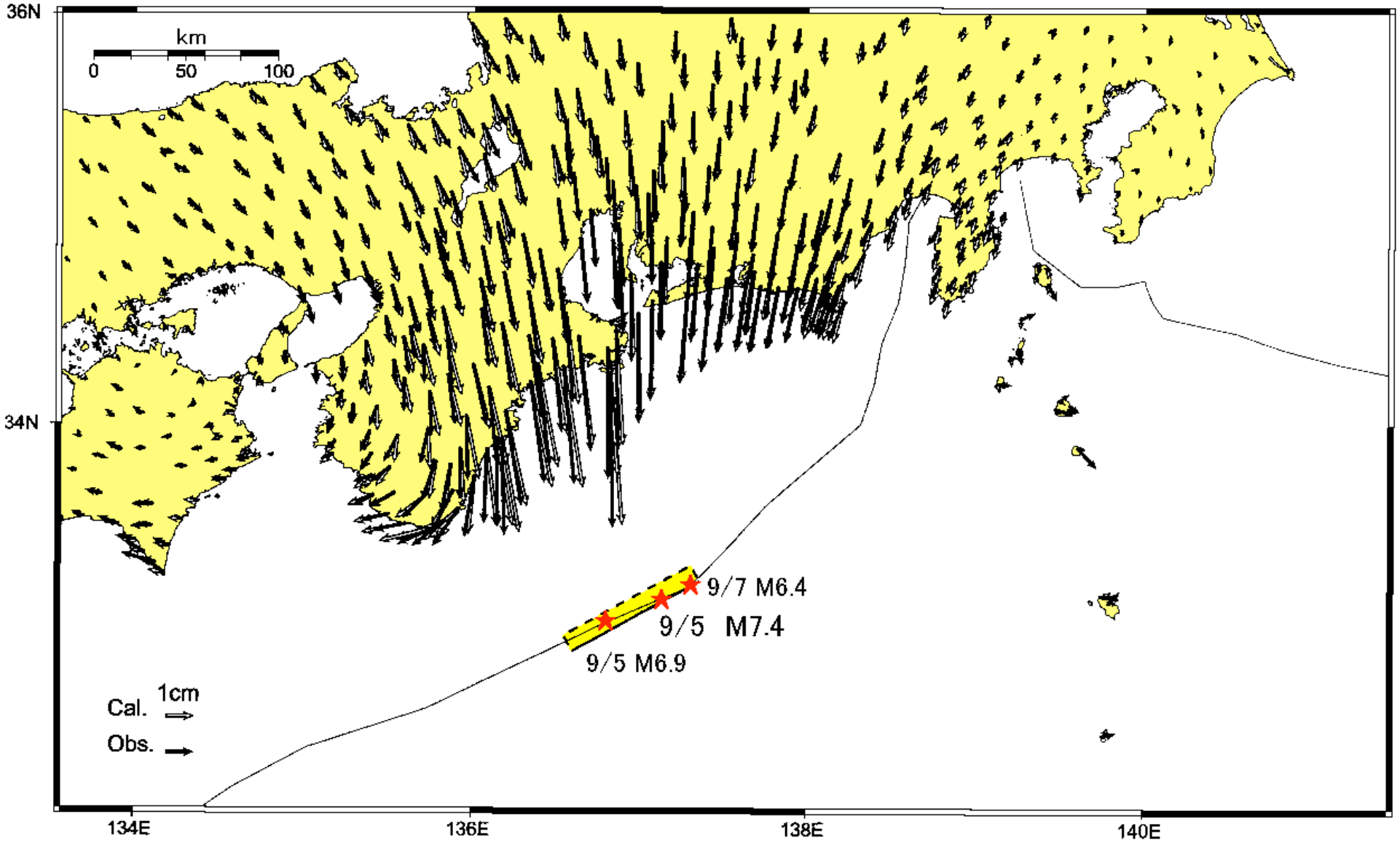
# Coseismic horizontal displacement detected by GPS

*(GSI, 2004)*



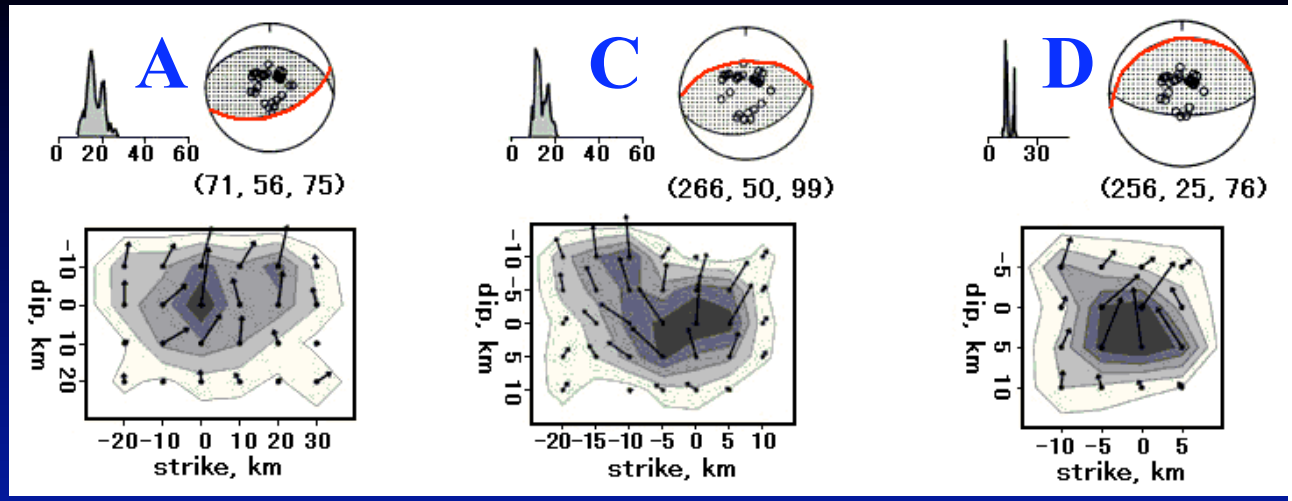
# Fault model (1) from GPS data

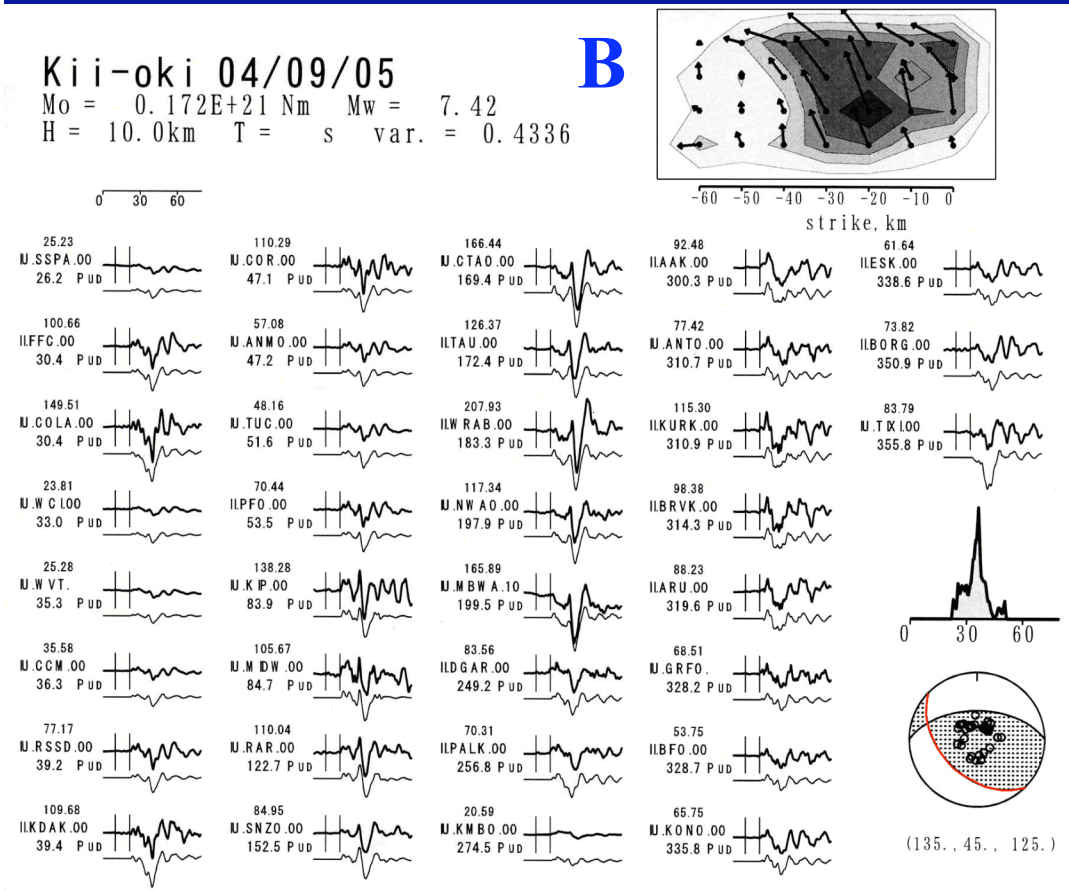
*(GSI, 2004)*

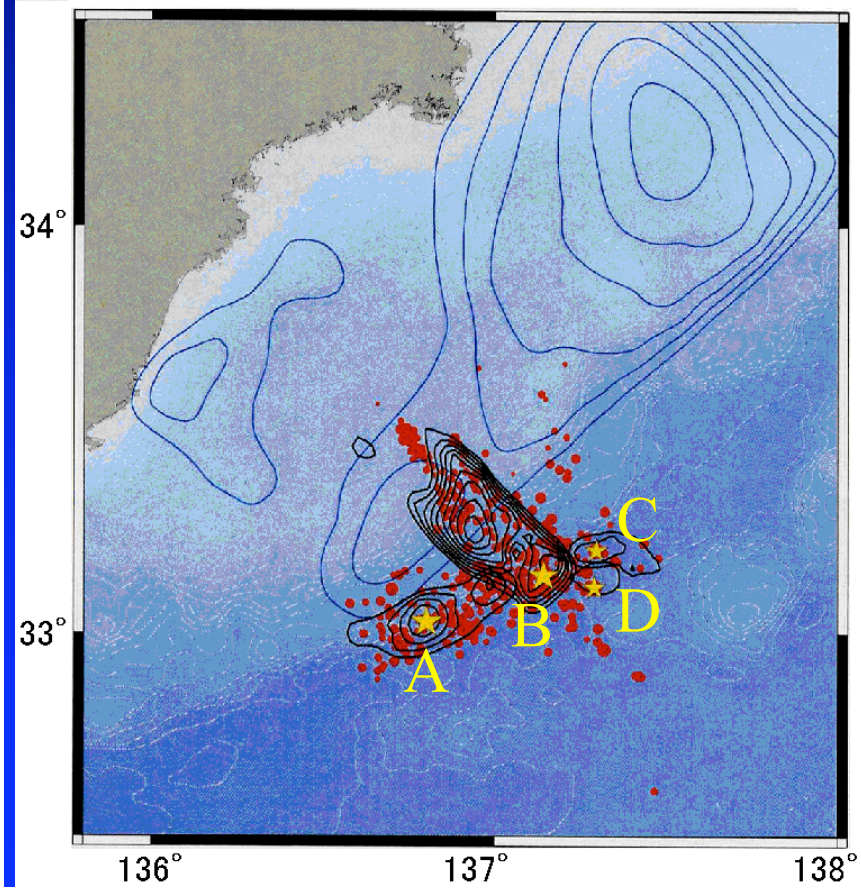


# Fault model (2) from teleseismic waveform

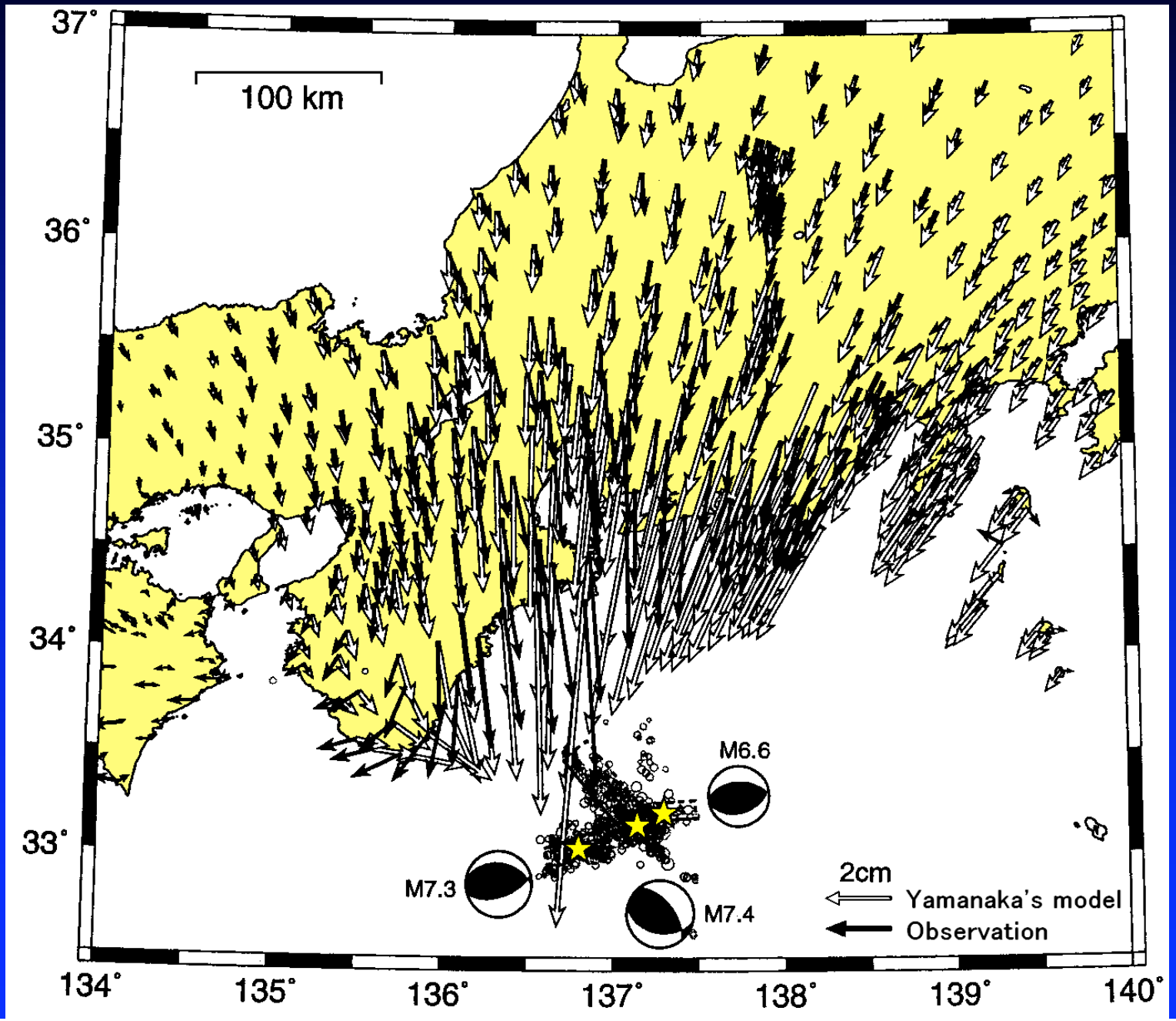
*(Yamanaka, 2004)*



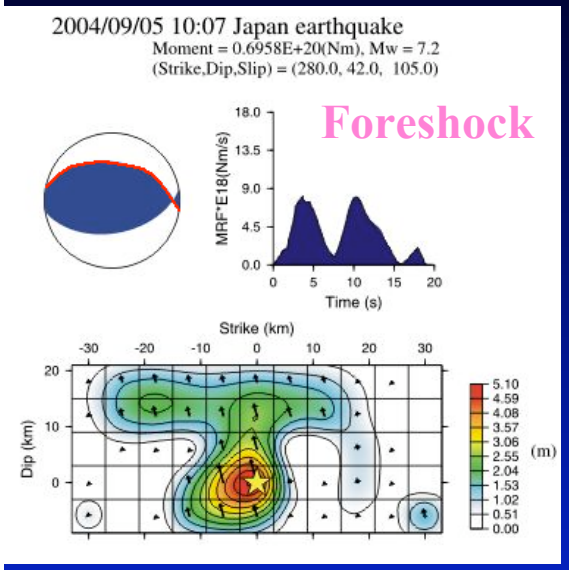



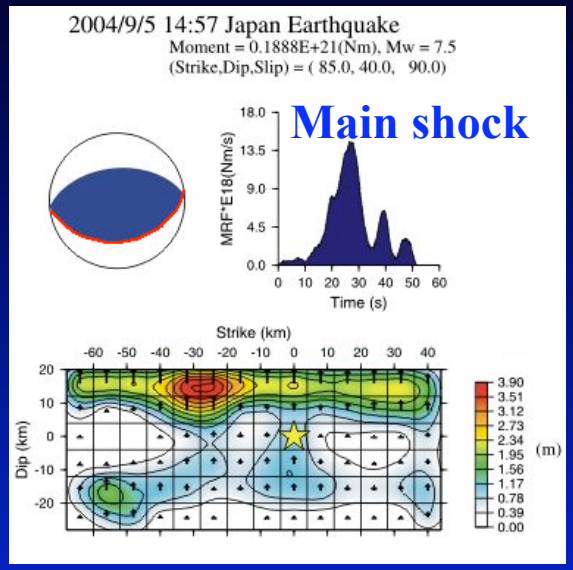
# Comparison of GPS data and Yamanaka's model



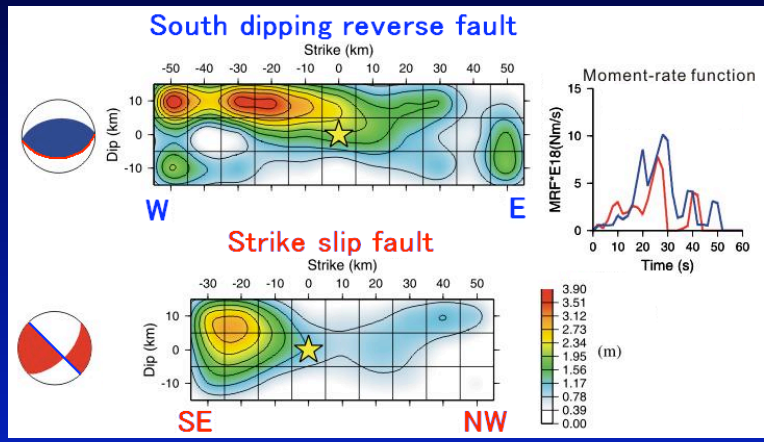

*(GSI, 2004)*

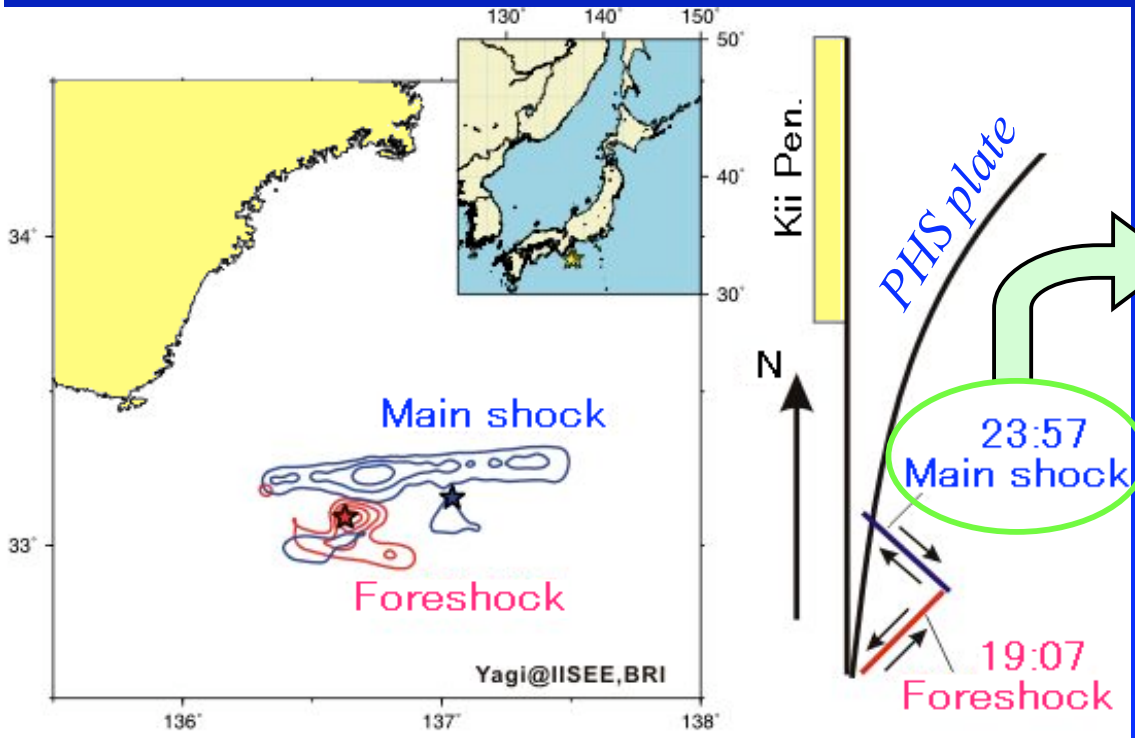
# Fault model (3) from teleseismic waveform *(Yagi, 2004)*

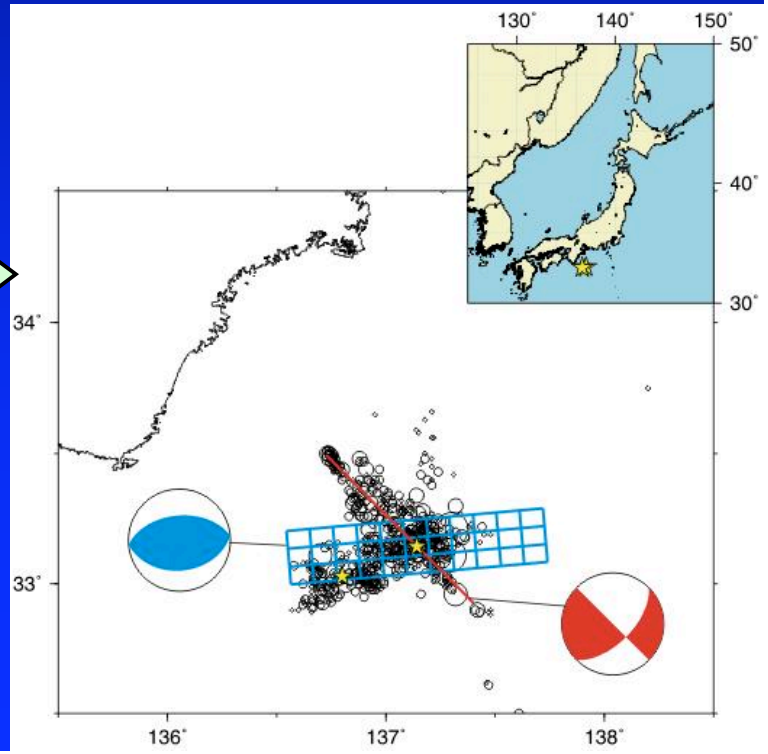



Double-fault model for main shock



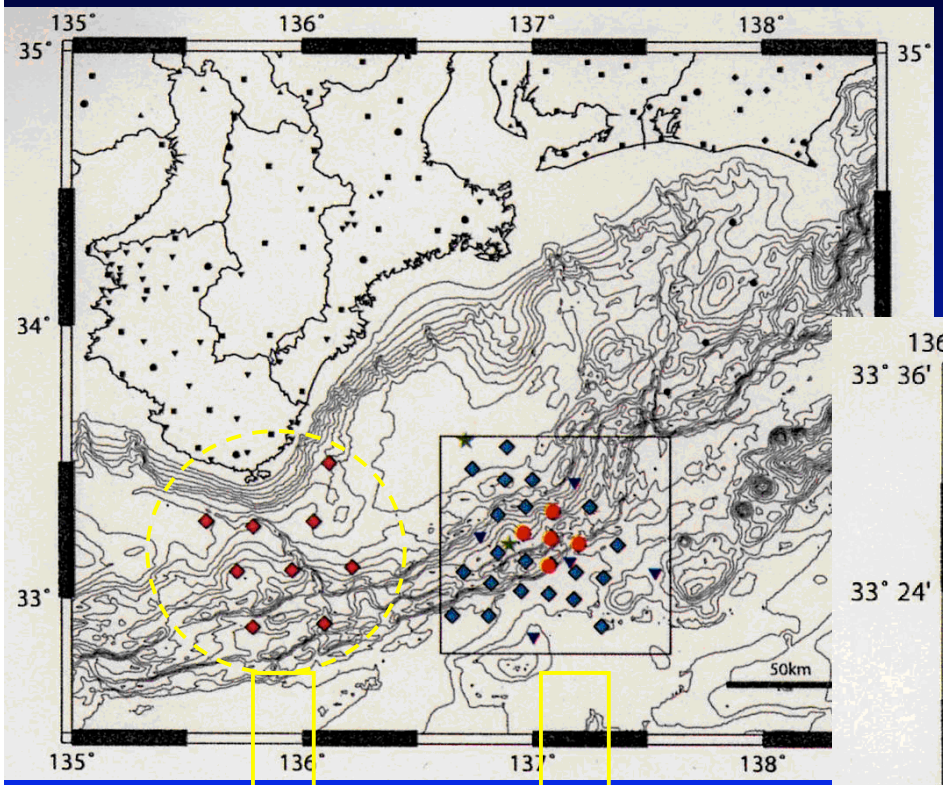



# Array of pop-up type ocean bottom seismometers

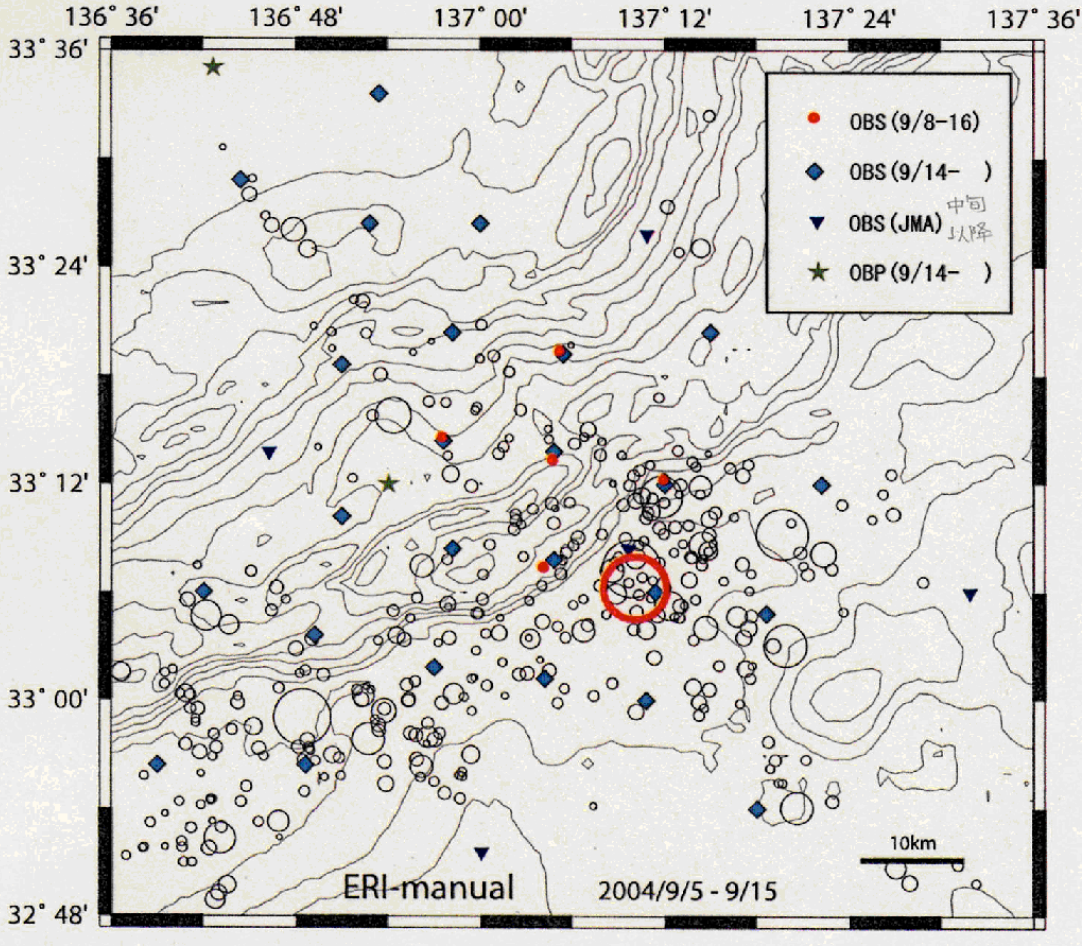
*( Earthquake Research Institute, Univ. of Tokyo )*

- 5 OBS were installed by a helicopter on 9/8 and picked up on 9/16



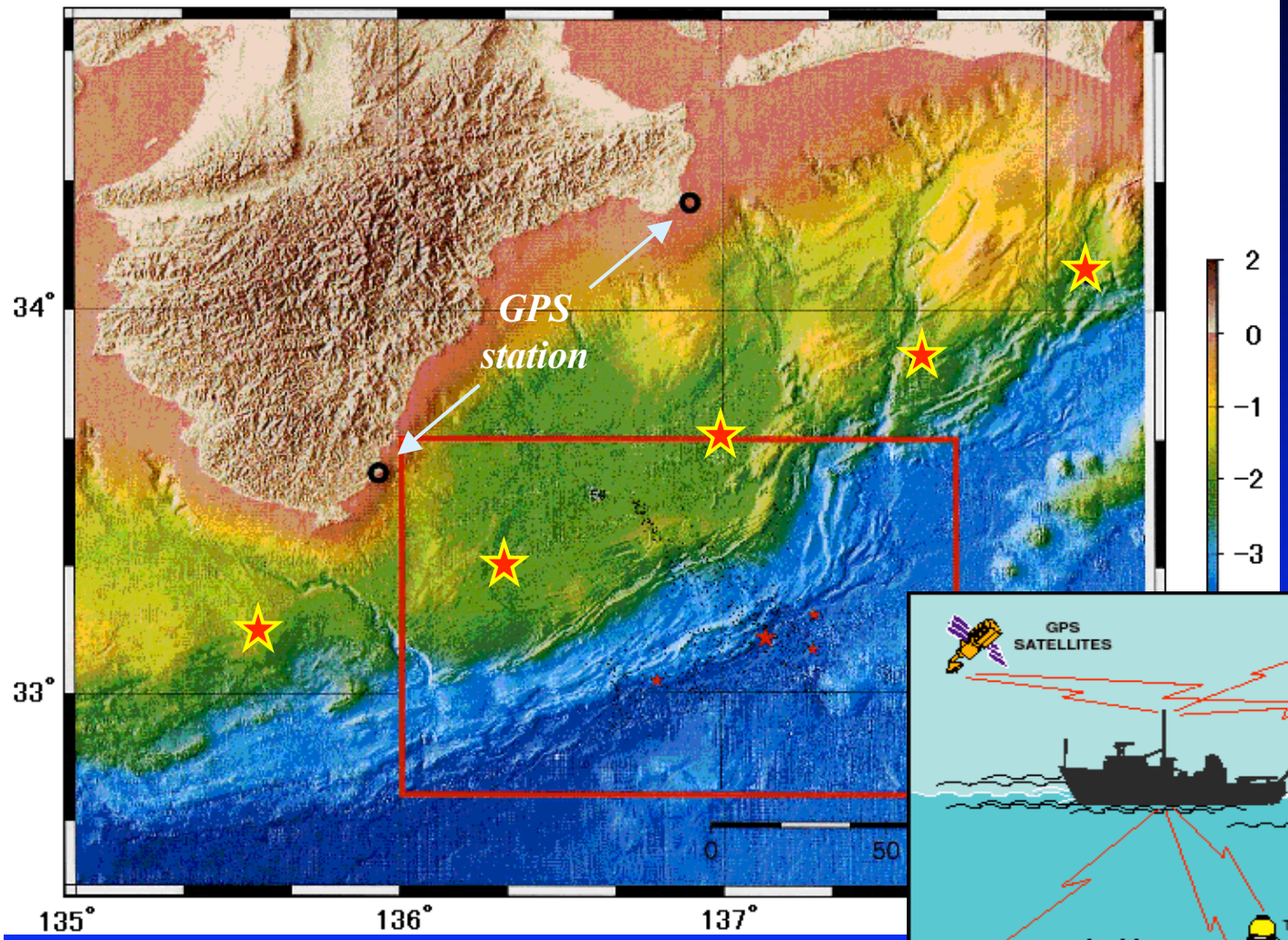

*long-term array*

*temporary array (25 stations)*

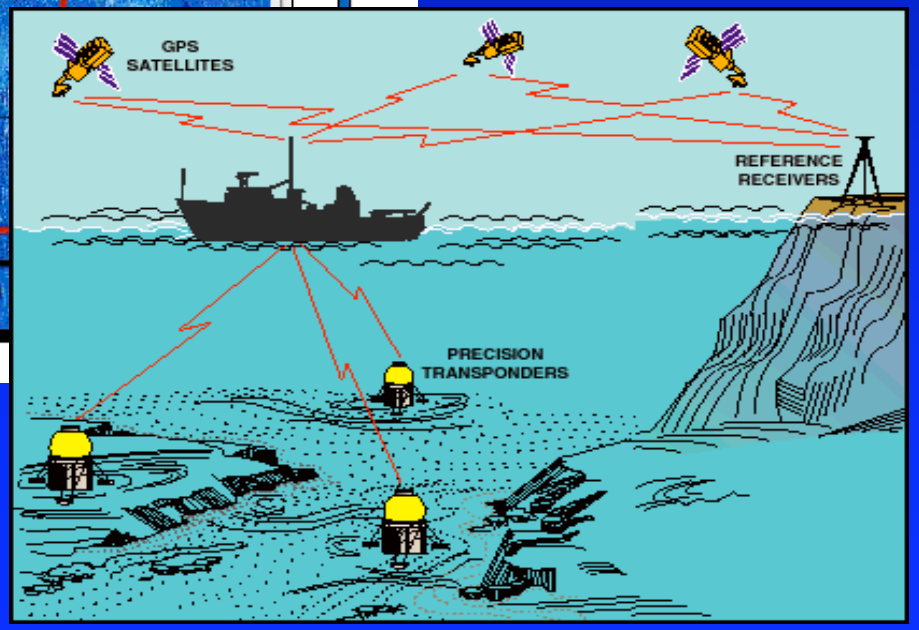


# Marine geodetic observation

*( Hydrographic and Oceanographic Department, Japan Coast Guard )*




ocean bottom bench mark

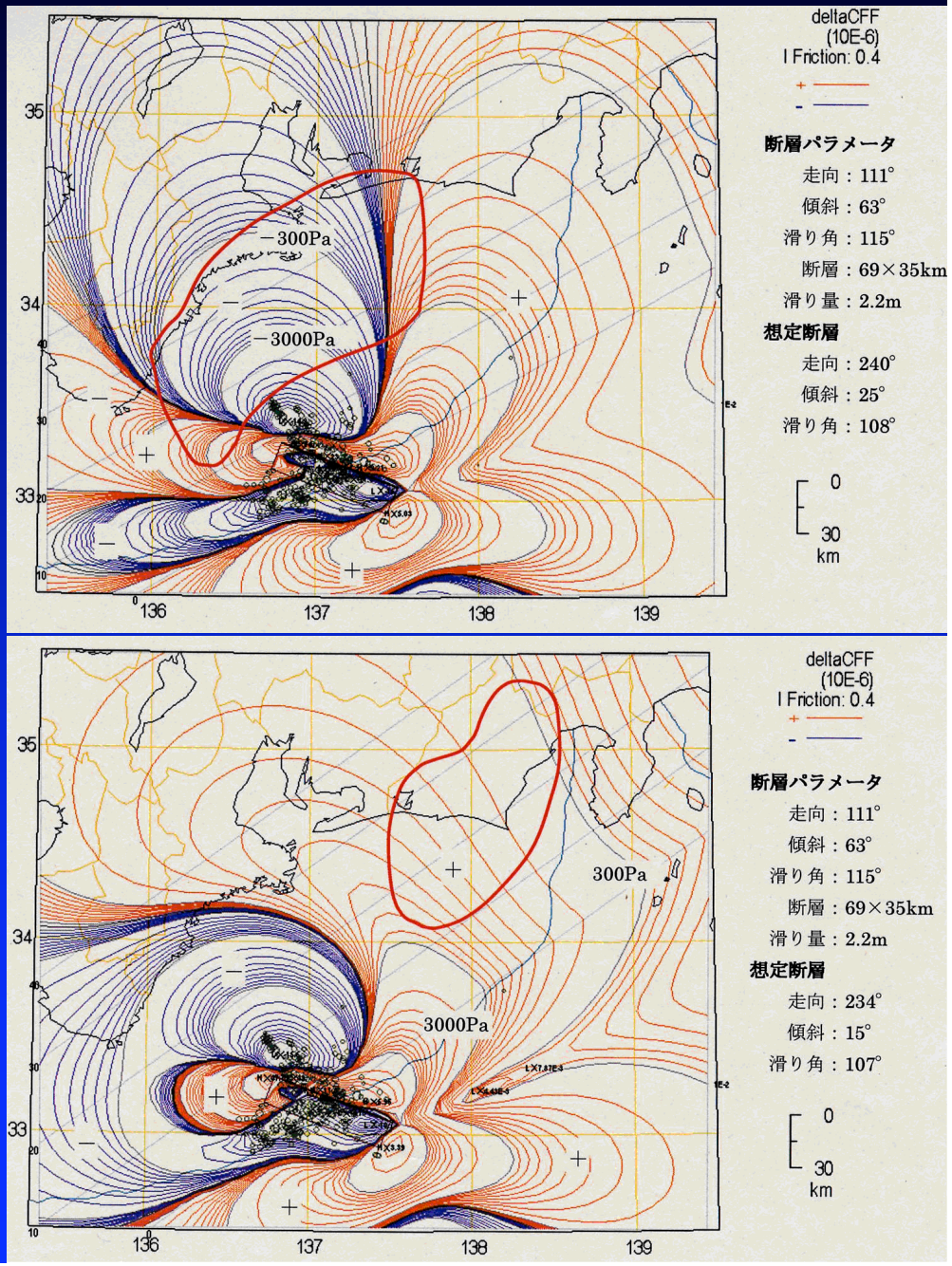


# Effect to the surrounding region (*JMA, 2004*)

⊿CFF on a 15°dipping plate interface

target : Tonankai (Ando,1975) earthquake → suppressed

target : hypothetical Tokai earthquake → accelerated although only a little



# Triggered ultra-lowfrequency events at shallow zone near Nankai trough

*( Obara, 2004 )*